

ABSTRACT

An electromobility focusing controlled channel electrophoresis system includes a first separation channel including an electric field intensity gradient profile in which the intensity is a continuous function of position within the channel over at least a portion of the channel, and the electrophoretic migration facilitated by the electric field is countered by an opposing force, which can be an electroosmotic flow force, to focus analyte species in the separation channel. A second channel including an analyte concentrator and a collection or transfer port is fluidly connected to the first channel by a steering valve facilitating manipulation of separated analyte species. Means for altering and controlling the electroosmotic force for moving analytes within the system and detectors configured for detecting analyte species are also included.